



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Journal of the Society of Arts.

FRIDAY, SEPTEMBER 17, 1858.

NOTICE TO INSTITUTIONS.

The Prizes and Certificates awarded at the Examinations held in May last, have been forwarded to the several Local Boards for distribution.

Copies of the Programme of Examinations for 1859 may be obtained on application to the Secretary of the Society of Arts.

COAL IN THE SOUTH-EASTERN PARTS OF ENGLAND.

The following is an abstract of a lecture delivered at the Royal Institution by Mr. R. Godwin-Austen, F.R.S. and G.S.:-

Fossil fuel may be of any geological age: seams and traces of it have often encouraged researches amongst the tertiary strata of the London basin; even within the last few years there has been a Woking Heath coal-mining adventure; and it has long been a matter of popular belief that Blackheath is to supply London with coal. There are, however, thick accumulations of tertiary fuel, of which Bovey, in South Devon, is the best example in this country. There is coal belonging to the period of the chalk—there have been innumerable trials for coal amongst the fresh-water formations of the Weald of Kent, Surrey, and Sussex—there is tolerable coal associated with the oolitic series of Yorkshire; but the coal to which the following speculations refer is that which is derived from what have been designated the “true coal measures.”

The period to which this coal belongs in the earth's history is of very great antiquity; but the usual way of representing its age by reference to a vertical scale of geological formations, is inapplicable in the present case; and the only way in which it can be stated is this, that the whole series of formations which may be seen in the cliffs of the south coast of England, from Torbay to the Isle of Wight, have been accumulated since the period of the “true coal” series.

The superficial extent of the carboniferous series in this country is very great; allowing for what has been denuded, and what we know is covered up, it may be described as extending in a broad band from Berwick diagonally across the whole island into South Wales, and thence across the county of Devon.

The usual subdivision of the great carboniferous series into a descending series of “coal measures,” “mountain limestone,” and red sandstone, is geographical; the area of sandstone with coal plants is western; that of the limestone is central; and true coal measures occur unconnected with either. The carboniferous formation, as a whole, exceeds that of any other geological group in this country, considered with reference to surface.

What is coal? It is pure vegetable matter—the product of plant-growths. And with respect to the mode by which it has been accumulated, two theories have been proposed; there is the “drift” theory, which accounts for its occurrence as the accumulations of vegetable matter, brought down by mighty rivers, and deposited in lakes and sea-margins. There is something too turbulent in this theory to account for our great seams of fossil fuel.

The other theory is, that coal is the product of a vegetation which grew upon the very spots, and covered the

areas over which our coal-beds extend, like the peat-beds of the present day. This is the theory of M. De Luc, M. Ad. Brongniart, and Messrs. Lindley and Hutton.

In supposing that coal originated as peat, all that is meant is, that it is the product of a vegetation composed of like plants, such as could live on in association over the same spots, growing above and decaying beneath; but differing as widely in the plants which composed it from our present peat plants, as did the whole of the vegetation of that period from that of the present period; the huge stigmariæ are wholly unlike any plants which commence the peat growth now.

The succession of a coal-field may be seen in a small scale in the deposits of lakes which have had differences of level from local accidents; and with reference to extent Ireland may be taken as an illustration of continuous masses of vegetable matter, of vast thickness, covering the whole country for 50 miles, and at low levels. Depress Ireland ever so little, so that the waters of the sea should reach in in some places, and the river waters, such as those of the Shannon, should collect into lakes; and just in proportion as the water was shallow would an uniform stratum of sand, or silt, or gravel, be spread out above the peat-growths.

The history of the coal-fields of this and every country, is that of an endless succession of such changes.

The question of the probable existence of coal measures at any given spot over the European area depends primarily on the original form of the surface of these coal growths; in other words, can we construct a map of Western Europe for the coal measure period?

The restoration of the physical features of a portion of the earth, for any given past period, is not so difficult, nor so purely speculative as some may imagine; every form and combination of mineral materials composing the sedimentary formations, all the forms of life they contain, serve to indicate the precise conditions under which they have been accumulated. Shingle and gravel mark marginal zones, sand zones mark lower or sub-marginal regions, deep sea deposits consist of mud or ooze; thousands of persons who have never even heard of the inquiries of the geologist, have doubtless argued that Blackheath, with its rounded shingle, must at some time or other have been at the sea-side. Assemblages of marine shells are the evidences of former seas; land and fresh-water shells and plants of old lakes and terrestrial conditions.

By the aid of such guides as these, the form of the area of the coal measures may be defined. Commencing in the west, we have early indications of the proximity of dry land and fresh-water accumulations. The earliest carboniferous deposits contain fern-like plants in wonderful profusion and beauty, with them are “pond muscles” (*anodon*). The land here lay to the south. The positions of the North of Ireland require the existence of a wide expanse of dry land somewhere beyond it on the north. The Wicklow mountains were part of the dry land of the coal period. In the beds of the carboniferous limestone near Dublin may be seen angular fragments of the peculiar granite of these mountains, and which must have been floated away by seaweeds from a shore line, just as happens now. Dry land connected the Wicklow mountains with those of Wales. If we pass over this interval, we find evidence that the mountains of Wales were then dry land. The conditions of portions of the coal-measures bordering on this region have been investigated by most competent geologists, Sir R. Murchison and Mr. Prestwich. In the Shrewsbury district are pure fresh-water limestones. Coalbrook-dale, throughout the whole accumulation of its beds, seems to have been immediately subordinate to an area of dry land. The great Yorkshire coal series, which has been so well described by Professor Phillips, is wholly lacustrine, with the exception of one intercalated band of marine limestone.

The proximity of dry land to the Edinburgh coal-field

has been shown by the researches of Dr. Hilbert and Mr. L. Horner, in the fresh-water deposits of Burdie. The mountains of Cumberland were dry land, and so all those of the border counties which range from Wigtonshire to Berwick. All the mountains of the western highlands of Scotland, an area extending north beyond the Shetlands, and westwards into the Atlantic, was also land surface: a vast tract lay in this (the north) direction, of which the great Scandinavian chain alone remains, and which supported the rivers which bore down the waste of granitic and crystalline rocks which enter so largely into the coal-measure sandstones of our northern districts.

Passing across into the Cotentin, we find a series of coal formations, skirting the old mountain ranges of the north-west of France.

The great central granitic plateau of France is fringed with coal growths, and over the whole of its surface are innumerable small coal fields, the lacustrine accumulations of the valleys of that region—this was an upland coal region.

The Vosges mountains have been raised over a surface which was dry land, and was connected with the Schwartzwald, the Odenwald, and the Spessart, and a great tract extending north and east, whence came down that curious assemblage of terrestrial forms which has been met with in the great fluvial and lacustrine deposits of the Saarbruch coal basin. Such is the form of the area which contains the great coal formations of western Europe.

The island which is represented in the interior of that great basin is not imaginary*; there is evidence of direction and extent of southern coast line from the shingle bed of Burnot. The extension of a band of shingle from beyond Eupen to the Boulonnais, marks the direction of an old coast line which lay to the north of it. It was from this mass of land that the terrestrial vegetation, and the fresh-water shells, so abundant in the Liege coal measures, were derived.

The whole area, as here described, may be compared, as to its physical characters, with large level tracts which lie west of the Blue Mountains in Australia, into which the Lachlan, the Darling, the Murrumbidgee, and the Murray discharge.

Between the close of the coal growths and the period of the formation which next succeeded, the surface of the whole of the area which has been sketched out was disturbed and broken up. Some of the lines, like that of our Pennine Chain, conform to those masses of terrestrial surface which tended in that direction; and a very remarkable line is one which has a general east and west direction across the European area. This line also conforms to the direction of old land which was to the north and south of it, and comprises the whole of the interval between the coal-growth surfaces of the Saarbruch districts and those of Belgium.

The section along the Meuse affords good illustrations of the character of this band of disturbed strata; in this section the upper beds of the coal measures occupy the deep troughs; the older parts of the Palæozoic series appear in the ridges. Such is the character of the great Liege, Namur, Mons, Valenciennes coal band throughout.

The line which passes along the south of this coal-band was a boundary for the oolite formations, and for the earliest accumulations of the cretaceous period. This is particularly well seen in the Boulonnais.

The question as to the probability of coal in this (south-east) part of England, depends on the relation between the physical configuration of the present surface as compared with this older surface.

The character of the axis or ridge of Artois, with its valleys of elevation, was described as a continuation of the line of disturbance along the south of the Mons

coal band on the east, and as coinciding with the north escarpment of the Boulonnais on the west. The Boulonnais is physically a portion of the great elliptical denudation of Weald, of which the North Downs from Dover, west, are a continuation of the chalk range from Wissant, east. This line of disturbance is continued on by the valleys of elevation of High-clere, King's-clere, &c., and opens out into the valley of Devizes, forming a great linear anticlinal ridge, which coincides with the axis of old red sandstone of Frome, supporting the coal-fields of Somerset on the north.

The principle on which the existence of a band of coal-measures may be conjecturally placed along the south-east counties of England is this,—that like physical features have a like significance; the precise probability of the continuity of the coal band along our south-east area is great, and every fresh point of agreement adds strength to that probability; so that when these amount to three or four, the evidence may be deemed conclusive.

The Kentish-town artesian well passed through the white chalk and gault, a shingle band of old sedimentary and crystalline rocks, ending on micaceous sandstones, at a high angle. Here the points of agreement with the French and Belgic sections were, 1st, the absence of the oolite series; 2nd, of the lower cretaceous strata; and 3rd, the occurrence of the tourtia or shingle band, as in Flanders and the north of France.

The artesian well at Harwich found the chalk resting in old clay slate, with cleavage structure, and micaceous sandstones; and, from the presence of a *Posidonia*, may be referred to the culm series of the Rhenish provinces or of Devonshire; in this instance there is a perfect agreement with the condition of surfaces which extend north from the Belgian coal band.

By the help of these points, we can trace the arrangement of the old rocks beneath our south-east counties. The limiting boundary of the oolitic series, and of the lower green sand, lies south of London. The coal-trough conforms to the valley of the Thames and Kennet; older rocks still, such as those of the Belgian series, rise to the north; beyond which, at the distance of Harwich, the coal series is again brought in.

The existence of coal beneath Blackheath is therefore not so great an improbability as was once supposed; nor in the absence of the whole series of secondary formations, from the white chalk downwards, is its depth probably very great.

ARSENIC IN PAPERHANGINGS.

The following letter, addressed to the editor of the *Daily News*, and published in that paper on the 13th inst., has been forwarded to the editor of the Society's *Journal* by Dr. Halley:—

SIR,—In your number for the 1st of the present month, which I have only just had an opportunity of perusing, there is a leading article on the above subject, in which allusion is made to a statement of mine, the validity of which you assert to have been controverted by the experiments and opinion of Mr. Phillips, the chemist to the Board of Inland Revenue. May I crave the indulgence of your space whilst I correct a misconception into which that gentleman has fallen, and at the same time vindicate the correctness of my own assertion.

The only communication that I have yet made upon this subject was that contained in a letter to the *Times* of the 11th January last, a letter hastily written on the spur of the moment, in reply to one by Mr. Fletcher, purposely condensed as much as possible, but containing a plain statement of facts as they occurred, with the simple view of warning others, and, if possible, to prevent the suffering I had myself undergone.

* The reference here made is to a map which represented the physical features of Western Europe, at the period of the coal growth.

This letter was copied nearly entire into the number of the *Pharmaceutical Journal* for February last.

In the number of the *Journal of the Society of Arts* for the 27th August last, at page 606, Mr. Phillips, taking the report in the *Pharmaceutical Journal*, entirely misconceives, or at any rate misquotes, my statement, for he says: "It is stated that Dr. Halley, of Harley-street, had detected arsenious acid in the atmosphere of his study, the walls of which were covered with green paper, and that the test he employed was 'sheets of paper soaked in a solution of ammonio-nitrate of silver,' and that upon this paper were deposited numerous well-defined crystals of arsenious acid." This is not what I stated, and I am surprised that any chemist should place such a misconception upon the words I used. The merest tyro in chemistry should be perfectly aware that arsenious acid could not be so deposited. What I did state was this: "The air of the room was next carefully tested (by means of sheets of paper soaked in a solution of the ammonio-nitrate of silver, a very delicate test of arsenic), and distinct crystals of arsenious acid, visible under a low power with the microscope, and sufficiently well defined and numerous to preclude the possibility of mistake, were obtained on two repeated and separate occasions." In writing to a non-professional journal I did not enter into every step of an analysis of a purely chemical nature, but gave the results of the experiment, merely indicating between brackets the key to the means used, that any chemist curious in the matter might repeat the experiment, filling up, of course, the blanks left in the description of the process. The obtaining of arsenious acid crystals was a positive and conclusive result—the fact—terminating the whole experiment, the commencement of which was the suspension in my room of sheets of paper soaked in the solution of ammonio-nitrate of silver, which in their turn were submitted to reduction, and so on to the result, the process being that known as Reinsch's test.

But Mr. Phillips questions the fact of the crystals obtained being really those of arsenious acid; on the contrary, asserting that they were "more than probably" those of nitrate of silver. Without laying claim to any great knowledge of crystallography, which you assert is my presumption, it requires no great amount of acumen to distinguish between the decided octahedra of arsenious acid and the tabular plates of nitrate of silver, not to mention the impossibility of the resulting crystals in the experiment described being those of the latter substance.

Again, Mr. Phillips has misquoted my opinion as to the mode in which the arsenic is given off from the paper. I have not asserted, nor do I believe, that the arsenic contaminates the air in the form of arsenious acid. This is a very difficult point to determine, requiring more time and attention than I have had to spare from my professional avocations; but that, under certain circumstances, arsenic does contaminate the air of rooms covered with those papers to a most deleterious extent I firmly re-assert; and shall be most happy—I won't say to convince, but—to show Mr. Phillips or any other chemist interested in the point the results of the experiments alluded to, upon which this opinion is founded.

And now, sir, in regard to the counter-experiments of Mr. Phillips and others, I am not prepared to explain in what manner, in every instance, they have failed to obtain similar results. It is not easy from mere description to judge of an experiment involving minutiae of manipulation; but knowing the quantities experimented with, and the very minute results I obtained—knowing also that those results would have been overlooked but for the use of the microscope, which Mr. Phillips, in common with many of his school, seems to disparage—I confess that his experiments, although, I have no doubt ably and apparently impartially conducted, have in no way shaken my confidence in those alluded to in my letter, conducted as they were with the kind and able assistance of Mr. Williams, of New Cavendish-street, a gentleman

whose extensive experience as a wholesale manipulator is well known. The tests used were all prepared by him, and he kindly undertook many of the minutiae of the analysis. It is however but fair to state that in several similar experiments I failed to obtain similar results—showing that it is not all arsenically coloured papers that give off the poison, and this may explain why some persons have not suffered from inhabiting rooms so papered; but, on the other hand, I re-assert, for I know from personal experience and from numerous instances to my own knowledge well authenticated, that many persons have suffered from this cause.

Apologetising for the unavoidable length of this communication,

I am, &c.,

ALEXANDER HALLEY, M.D.

7, Harley-street, Sept. 11, 1858.

The following is the passage in the article from the *Daily News* of the 1st inst., referred to above:—

The old proverb, that a "little knowledge is a dangerous thing," if not to its possessor at least to others, has been well exemplified by some recent chemical investigations. The progress of chemistry of late years has been so rapid that its most enthusiastic students have had hard work to keep pace with its advance. It has accomplished such marvels, and shown such usefulness in improving the manufacture of so many of the conveniences and even necessities of every-day life, that we have all learnt to treat the opinion of the chemist at least with respect, if not with something approaching the most profound deference.

If the chemist is to retain that position, he can only secure it by the name not being usurped by those who really have no title to it. Those who do assume a knowledge of the science must also be careful not to step beyond the legitimate conclusions of their analysis, or substitute imagination or presumptuous assertion for demonstration.

In the evidence given by Dr. Alfred Swaine Taylor before the Committee of the House of Lords, on the "Sale of Poisons Bill," he alarmed their Lordships by describing the injurious effects of paper-hangings coloured with the arsenite of copper. Knowing the reputation of Dr. Taylor as a chemist, we have felt very uncomfortable since when sitting in any room covered with pretty green paper—especially if a gas-light has been burning. Our terror seems to have been partly shared by the Commissioners of the Inland Revenue Department. Their new offices had been hung with the poisonous paper, chosen no doubt for its refreshing colour. Instead of at once tearing down the obnoxious paper, they proceeded according to the customary rule of routine; their attention having been called to the circumstance they directed Mr. Phillips, the Chemist to the Board, to investigate the subject, and report.

The devotedness of the Commissioners is most admirable. We can fancy the conscious sense of martyrdom with which they sat environed with supposed arsenical atmosphere, while their chemist was preparing his Report. We knew not that we possessed a Board who would sacrifice their own health, rather than put the taxpayers to the expense of re-papering their offices. We congratulate them on the result of their officer's Report, and that they have now the pleasing assurance that their devotion has not filled their bones and livers with arsenic, to be produced by Professor Taylor, on some future *post-mortem*, for the edification of a coroner and his jury.

Mr. Phillips set about the investigation in a very proper and sensible manner. Two small closets were papered with the suspected covering. No ventilation was allowed, save that admitted round the chinks of the doors. The air was thus necessarily longer in contact with the paper than it would have been in an ordinary room. Both closets were carefully closed for 72 hours,

and in one a gaslight was kept burning 45 hours. The most delicate re-agents for testing the atmosphere of the closets were used without detecting the slightest trace of arsenic. It may be asked, then, how did these papers acquire so bad a name?

Last February a physician communicated to the *Pharmaceutical Journal* that he had detected arsenious acid in the atmosphere of his study, the walls of which were covered with green paper. The test he made use of for determining this fact was the hanging in his room "sheets of paper soaked in a solution of ammonia and nitrate of silver." After a time he found the paper covered with numerous well-defined crystals of arsenious acid, visible under a low power with the microscope. Mr. Phillips hung paper similarly prepared in his experimental closets. His paper was covered with crystals, but analysis proved these crystals to be composed of nitrate of silver, derived from the solution in which it had been dipped. Mr. Phillips therefore assumes, and we think with perfect justice, that if the learned Physician had trusted less to his presumed knowledge of crystallography, and tested his crystals, instead of jumping at the conclusion that they were composed of arsenic, he would have found them nothing more than nitrate of silver.

It may be some consolation for those of our readers who inhabit rooms papered with pretty green patterns, to learn that Mr. Phillips and his family have occupied a sitting-room covered with a paper heavily laden with arsenite of copper, for three years, without experiencing the slightest ill effect, though his bed-room during the whole time was papered with arsenical hangings. This is not, however, the principal reason why we have noticed Mr. Phillips's admirable Report. It is, we conceive, of the greatest importance that the public should be put on their guard against the too easy reception of assumed chemical conclusions.

We have no doubt of the perfect good faith of the physician who called the attention of the public to his presumed discovery. He did so from a praiseworthy motive. But we hope the exposure of his defective analysis will caution others from intruding their imperfect determinations on the public, to the serious detriment, it may be, of their honest neighbours.

The following letter, in reply to Dr. Halley, appears in the same journal for the 14th inst. :—

To the Editor of the Daily News.

SIR,—Dr. Halley has endeavoured to show, that in your leading article on the hasty conclusions formed by some chemists you have done him an injustice. He believes that you have been misled by the report of Mr. Phillips, the chemist to the Board of Inland Revenue.

Now, sir, I do not believe that you have been misled in the slightest particular, or done any injustice to Dr. Halley. What are his own statements in defence of his analysis? He says that he tested the air of the room covered with arsenical dyed paper by means of sheets of paper soaked in a solution of the ammonio-nitrate of silver, that these sheets of paper, after exposure, were reduced, submitted to a test known by the name of reinsch, and that by this means he obtained crystals sufficiently large to be seen under a low power of the microscope.

Because these crystals were decided octahedra, he maintained that they were crystals of arsenious acid. You, sir, complain, and so do I, that because Dr. Halley saw crystals of the form assumed by arsenious acid under certain circumstances, he jumped at the conclusion that the form of the crystal was a sufficient evidence to identify the substance. Now, sir, I have devoted a little attention to the subject of crystallography, and I therefore know that there are a vast number of substances besides arsenious acid which will crystallise as regular octahedrons. Dr. Halley had paper soaked in a combination of ammonia, silver, and nitric acid. He submits

this paper, after its exposure to an atmosphere contaminated by gas, to certain tests. The paper had therefore, in all probability, absorbed the element sulphur, either in a simple state or combined with certain gases. Can Dr. Halley, therefore, take upon himself to assert, that the octahedral crystals could not have been formed from certain chemical combinations made during his experiments, which may not have contained a single particle of arsenic or arsenious acid? Is he sure that these octahedra were not crystals of sal ammoniac?

His sheets of test paper contained ammonia, the paper itself was probably not free from the chlorine it had absorbed in its manufacture. Is it not therefore as probable that the crystals he saw under his microscope were a combination of chlorine and ammonia, which will assume the form of a perfect octahedron, as that they were formed from a combination of arsenic and oxygen derived from the atmosphere? Which is more probable? That the crystals were formed from the combination of substances existing in the paper, or from the combination of substances supposed to be derived from the atmosphere. But taking into consideration the known impurities of the atmosphere, these might have combined with some of the ingredients contained in or introduced into the paper, so as to form combinations, known to crystallise in the form of the regular octahedron.

For any evidence Dr. Halley has given us to the contrary, he may have actually produced diamonds without being aware of his valuable discovery. Both his paper and the atmosphere contained carbon. The diamond, as pure carbon, assumes frequently the form of the perfect octahedron, in its crystals. If form be a certain test as to chemical composition, what evidence had Dr. Halley adduced that his so-called crystals of arsenious acid may not have been microscopic diamonds?

Dr. Halley admits that he was satisfied that because he saw crystals which he assumed to be perfect octahedra, these crystals were necessarily composed of arsenious acid, because he suspected the presence of arsenic in the atmosphere. It is of his rash conclusion that Mr. Phillips complains. He examines the atmosphere of a room, far more likely to be impregnated with arsenic than that examined by Dr. Halley, without discovering the slightest trace of that deleterious substance. Mr. Phillips is a chemist, Dr. Halley a microscopist. Dr. Halley gets a friend to manipulate the chemical part of his tests for him. Trusting to the deceptive form of his crystals, he neglects to submit these crystals to any test but this form. That form belongs to a host of substances besides arsenious acid; therefore Dr. Halley's ambiguous result cannot be taken as any confutation of Mr. Phillips's analysis.

Dr. Halley wrote his account of his experiments so vaguely as to lead Mr. Phillips to infer, as one reasonably might have done, that the microscopical crystals were deposited on the surface of the test papers. Mr. Phillips found his paper covered with crystals of nitrate of silver; he, therefore, hazarded the opinion that Dr. Halley's crystals, if tested, would probably have been found to be simply nitrate of silver. To this Dr. Halley replies, that it requires no great amount of acumen to distinguish between the decided octahedra of arsenious acid, and the tabular plates of nitrate of silver. If Dr. Halley will consult Phillips's translation of the *Pharmacopœia*, which I have no doubt he possesses, he will see there that the author of that work states that the octahedral faces of crystals of the nitrate of silver sometimes are so enlarged as nearly to obliterate the rhombic faces. It would require a very delicate eye to distinguish the octahedra of nitrate of silver, with their upper and lower angles replaced by a plane, from the regular octahedra of arsenious acid, with their upper and lower angles replaced, as they frequently are, by planes of the cube.

Without actual goniometrical measurement, it is extremely difficult to distinguish the regular octahedron

from some of the octahedra of both the square prismatic and the rhombic systems.

I would recommend Dr. Halley to repeat his experiments, and when he has obtained his octahedra, to submit them to such chemical tests as may satisfactorily determine their substance. Till he does so, he has no answer to Mr. Phillips's tests, nor will his negative crystalline evidence satisfy a

CRYSTALLOGRAPHER.

THE BAROMETER.

In the First Report of the Committee of the House of Commons on Shipwrecks (1843), will be found the evidence of Captain (now Admiral) Fitzroy, suggesting the importance of the barometer, not only on board ship, but on land on the coasts, as a guide for men having the charge of ships and fishing vessels. Admiral Fitzroy says:—

"I think that a neglect of the use of the barometer has led to the loss of many ships. From a want of attention to the barometer, they have either closed the land (if at sea), or have put to sea (being in harbour in safety) at improper times, and in consequence of such want of precaution the ships have been lost, owing to bad weather coming on suddenly, which might have been avoided had proper attention been paid to that very simple instrument. While alluding to the use of barometers, I may remark, that if such weather-glasses were put in charge of the Coast guard at the principal stations round the coast, so placed as to allow any one passing by to look at them, they might be the means, not only of preventing ships from going to sea just before bad weather was coming on, but of preventing the great losses of life which take place every year on our coasts (particularly in the Orkney Islands and on the coasts of Scotland and Ireland), owing to fishing vessels and boats going to sea when bad weather is impending. No bad weather ever comes on our coasts without timely warning being given by the barometer. The oldest seamen are often deceived by the look of the weather, but there is no instance on record of very bad weather, such as would have involved loss of life to the extent we have heard of in several years, having come on without the barometer having given timely warning. By the very small expense of an establishment of barometers, so placed as to be accessible to any fishermen, boatmen, or others on the coasts, much loss of life, as well as loss of boats, and even shipping, might be prevented.

"What state of the barometer indicates danger? It varies in different climates according to the range. The range is small between the tropics, but very large in the higher latitudes. In our climate the range is usually about two inches. The barometer falling considerably below its average height is at once an indication that some considerable change is going to take place, and when it falls low, as for instance (in our climate) to near 29 inches, or below 29 inches, a gale is certain to follow.

"Are the Committee to understand that you are of opinion that every ship ought to have a barometer on board?—I think that every ship ought to have either a barometer or sympiesometer, which is an efficient substitute for a barometer.

"Does the barometer show a sudden change of wind as well as the coming on of bad weather? Supposing a gale of wind is blowing, and you are sailing with a fair wind, does the barometer show any change of wind?—Decidedly.

"Supposing the wind was at west-north-west, and it shifted suddenly to west-south-west, would the barometer indicate that?—It requires some practice to be able to say *exactly what is likely to take place* after a change in the barometer; but the principal point for a seaman is, that no violent wind will blow without the barometer giving warning. He may not know exactly from what

quarter the wind will come, but no strong wind will come on without warning being given.

"You recommend that at the Coast-guard stations there should be a barometer, by means of which people would know when a violent wind was coming on; but as it would not indicate the quarter from which it was coming, would you have the merchant ship always remain in port till the barometer showed fine weather?—Being accustomed to the barometer on our coast, one could tell from what quarter the wind would probably come by the height of the barometer, taken in connexion with its previous height, and the state of the weather, and the strength of winds that had prevailed before. Taking the state of the barometer in connexion with the appearance of the weather one could make a satisfactory conclusion as to the quarter from which any violent wind would come. And the barometer, after very little practice, can be used by any man. There is no difficulty in using it sufficiently to know that danger is coming on; and if danger is coming on, a man refrains, of course from exposing himself to it; the quarter from which the wind comes being of minor consequence.

"With a north-easterly wind, in this part of the world, the barometer stands, on an average, about half-an-inch higher than with the same strength of wind from the south-westward. All over the world there is a similar difference proportionate to the range of the mercury, for which allowance should always be made in considering the height of the barometer."^{*}

In the first number of the Meteorological Papers, published by the Board of Trade, 1857, is the following passage respecting the use of weather-glasses:—

"The variety of interesting and useful, if not always important, subjects included within the range of meteorology, is not perhaps sufficiently realised in the minds of active participators in the world's stirring work. Irrespective of any scientific object, how much utility is there to all classes in what is commonly called 'weather wisdom?' In our variable climate, with a maritime population, numbers of small vessels, and especially fishing boats, how much life and property is risked unnecessarily by every unforeseen storm? Even animals, birds, and insects have a presaging instinct, perhaps a bodily feeling, that warns them; but man often neglects his perceptive and reasoning powers; neither himself observes, nor attends to the observations of others, unless special inclination or circumstances stimulate attention to the subject. Agriculturists, it is true, use weather glasses; the sportsman knows their value for indicating a good or bad scenting day; but the coasting vessel puts to sea, the Shetland fisherman casts his nets, without the benefit of such a monitor, and perhaps without the weather wisdom which only a few possess, and cannot transfer to others.

"Difficult as it is to foretell weather accurately, much useful foresight may be acquired by combining the indications of instruments (such as the barometer, thermometer, and hygrometer) with atmospheric appearances. What is more varying than the aspect of the sky? Colour, tint of clouds, their soft or hard look, their outline, size, height, direction, all vary rapidly, yet each is significant. There is a peculiar aspect of the clouds before and during westerly winds which differs from that which they have previous to and during easterly winds, which is one only of the many curious facts connected with the differing natures of easterly and westerly currents of air throughout the world, which remain unchanged, whether they blow from sea to land, or the reverse.[†]

"Perhaps some of those who make much use of instruments rather undervalue popular knowledge, and are

* In south latitude the south wind corresponds to our north wind in nature and effects. The easterly and westerly winds retain their respective peculiarities in both hemispheres.

† Exclusive of local land and sea breezes of hot climates.

reluctant to admit that a 'wise saw' may be valuable as well as a 'modern instance;' while less informed persons who use weather-glasses unskillfully, too often draw from them erroneous conclusions, and then blame the barometer.

"Not only are reliable weather-glasses required at the smaller outlying ports and fishing places, but plain, easy, intelligible directions for using them should be accessible to the seafaring population, so that the masters of small vessels, and fishermen, might be forewarned of coming changes in time to prepare for them, and thus become instrumental in saving much property and many lives."

The works of Humboldt, Herschel, Dové, Sabine, Reid, Redfield, Espy, and others, confirm these views.

Acting on the foregoing views the Board of Trade have, during the past year, sanctioned (by way of experiment) some assistance being given by government to enable poor fishermen, and those employed on the more exposed shores of the British Islands (when unable to afford the expense themselves), to benefit by the use of weather glasses.

Ten substantial barometers, strongly made, durable, and easy to observe, have been already located as experimental loans at the following fishing stations:—Newhaven, Anstruther, Arbroath, Rosehearty, Whitehills, Port Easy (Portessie), Lybster, Dunheath, and St. Ives (Cornwall). Another will be placed in Mounts Bay. The Scotch Fishery Board have aided in this matter. Full instructions for observing and using the instruments have accompanied them to each place.

In the west of England; on the east coast of England; on the north-west coasts of Ireland and Scotland, and in the Shetland Islands, there is much need of such instruments.

Disasters and loss of life among the fishing population of our coasts, more especially in Banffshire, Lerwick, and Innishowen, have been narrated in the public prints. Many of these calamities might have been avoided by the judicious use of weather-glasses.

The Board of Trade have published a manual of instructions for the use of barometers and thermometers as weather-glasses, in two forms, one for fishermen and coasters, the other for young officers at sea.*

LIQUID MANURE.

The following is extracted from an article "On the Manuring of Grass Land," contributed by the Rev. W. R. Bowditch, of Wakefield, to the last number of the *Journal of the Royal Agricultural Society*:—

"The omission of sewage would render this paper culpably incomplete, and yet the application of sewage even to grass must ever be limited. The excessive quantity of water which must be put on in order to obtain sufficient fertilizing matter is so large, that the prudent and profitable application appears to me to be restricted to localities where it can be got on the land by the force of gravity, and where the soil is so porous and sloping as to allow a rapid removal of the excess of water. Moreover the grass grown by sewage requires to be frequently mown to prevent rotting, and therefore soiling seems the correlative of sewage manuring. That soiling will pay on a large scale, except for the production of milk and butter remains to be proved, and if it do not pay there is an end of the matter. Farmers and landowners cannot afford to sacrifice their incomes to crochets, nor, in our densely peopled country, can we spare the produce of a single acre of available land. The Craigentenny meadows, near Edinburgh, afford a splendid instance of success due entirely to a judicious application of sewage, and wherever the same conditions obtain sewage should be applied in like manner. A ready and cheap vend for

dairy produce, the means of applying the sewage by gravity, or at most by one pumping (as on some of the Edinburgh land), without any outlay for costly apparatus of distribution, and above all porosity and declivity of soil adequate for the removal of surplus water, are conditions to be fulfilled before a reasonable expectation of profit can be entertained. Where these meet, the farmer will do well to try a few acres, and extend his breadth of sewage irrigation accordingly as he finds it pay. It is far better that the sewage of towns should run to waste into the ocean, than that our cultivators should apply it to the land and lose money by the application.

"Of course I know what imaginative theorists will say to this, but after reading all their arguments (and sophisms too), and weighing against them the sober truths of experience and analysis, I can come to no other conclusion.

"But may not the farmer irrigate with his own home-made liquid manure? Where he has command of water and can do it without a constant charge for labour he may, but otherwise I entirely concur in the sentiment of one of our leading agriculturists: 'I am more and more averse to liquid manure: the labour is endless.'

"Let the liquid manure be mixed with soil, finely sifted ashes, and such other material as the farmer can command, and the compost applied liberally to the grass of the farm, and the profit thus derived will far exceed that to be made by the costly plans which have recently been proposed for adoption.

"I must observe, however, that the most prolific source of grass manure is human excreta, now expensively wasted in town sewage. Large sums of money are now expended to enable us to waste what may be economised with advantage in every way. The present absurd water-carriage of excreta must be abandoned, and sewers employed for their legitimate purpose, viz., to carry away waste water to its natural receptacle, the river. Moveable boxes should be attached to every house, and removed weekly in summer, fortnightly in winter. A cistern filled with dry pounded clay would be placed overhead, and a simple mechanical contrivance would throw down a measured quantity of this every time the handle was raised as water is now let down a closet. Nature's deodorizer and disinfectant would prevent the escape of injurious exhalations, and the refuse would be removed by water or other carriage some miles into the country, to await under sheds the farmer's season of use. This manure could be screened and applied by distributors, and would produce crops of grass which experience alone will enable us to estimate. Every element of grass is contained in this manure in large abundance, and while its preparation formed a sanitary improvement of much value to towns, its use would be a boon of enormous value to the country."

BISCUIT FODDER.

The following is extracted from the *Morning Post*:—

This is the name given by M. Naudin, a veterinary surgeon of the Imperial Guard, to a preparation of his invention, which has already been successfully tried in some cavalry barracks, and would seem, besides other advantages, to solve the problem which at present engrosses the attention of the agricultural world, viz., a sufficient supply of fodder for cattle in times of scarcity occasioned by drought. This biscuit fodder is composed of all kinds of substances generally given to horses and cattle, such as straw, hay, clover, oats, barley, peas, &c. To these may be added many others, such as the refuse of the wine-press, the pulp of various roots, the stalks of millet and maize, the leaves of the vine, the beetroot, and of certain trees, the sweepings of the barn and hay-loft, which contain a vast quantity of nutritious matter in the flowers and seeds of hay which are generally thrown away. &c. All these ingredients are bruised and

* These may be purchased, 6d. each, of J. D. Potter, 31, Poultry.

chopped together; a mucilage of barley-flour is then added, with a little salt, and the mixture is then left to itself for a few hours until a slight fermentation has set in, when it is put into square moulds, made into cakes, and left to dry in a current of warm air. In this state it may be preserved for a great length of time. When it is to be used, it is moistened with about one-fifth of its weight of water; each cake is broken into seven or eight bits, and put into the manger or nosebag, as the case may be. The cakes should weigh about a pound each; 20 cakes of that weight are sufficient for the daily ration of a horse. The advantages which this preparation offers are evident; mastication and digestion are rendered easier, and therefore the general health of the animal ensured. A sufficiency of fodder can be laid in store for the winter; the rearing of cattle need not be checked for want of food, and the waste occasioned by the animals themselves while they eat at the manger, letting half their allowance fall on the floor of the stable, is obviated. The hackney-coach horse, which eats its hay at the stand, often soiled with mud and filth, will find in the biscuit fodder a clean and wholesome aliment; horses conveyed on railways, and especially on board ship, can be easily fed, the stowage of a sufficient quantity of these cakes for a long voyage taking up but little space, while all danger of fire and spontaneous combustion, of so frequent occurrence in hay lofts, is completely obviated. Lastly, these cakes may be used as convenient vehicles for any kind of drugs which it might be necessary to administer.

SILKWORM (*AYLANTHUS GLANDULOSA*).

The *Aylanthus Glandulosa*, on which the new silkworm lately introduced into France by M. Guérin Menneville, feeds, as recorded in last week's *Journal*, p. 630, grows readily in our English gardens, though it has not yet acquired an English name. It is frequently found on the continent among the Boulevard trees, for which its fine appearance and fast growth render it suitable. Its flowers, however, smell abominably, but luckily they last only a short time. It is of Chinese or rather Japanese origin. The French give it the name of "Vernis du Japon," under a mistaken idea that the tree produces varnish. This, however, is not the case. Varnish is obtained from a plant something like it, but in reality altogether different—a sort of "Rhus" or "Sumach."

SOUTH KENSINGTON MUSEUM.

During the week ending 11th Sept., 1858, the visitors have been as follows:—On Monday, Tuesday, and Saturday (free days), 4,079; on Monday and Tuesday (free evenings), 5,733. On the three Students' days (admission to the public 6d.), 760; one Students' evening, Wednesday, 135. Total, 10,707. From the opening of the Museum, 592,147.

Home Correspondence.

MECHANICS' INSTITUTIONS AND SECONDARY EDUCATION.

SIR,—Your correspondent "J. C. B.," in the *Journal* of 27th August, proposes a plan for promoting secondary education, such as is usually given or ought to be given by Mechanics' Institutions, and, having carefully considered the matter in all its details, courts objections to it. I see several objections, not only to its being practicable, but to its being efficient for the purpose required.

In the first place, I doubt if so small an annual sum as the largest he names would prove a sufficient stimulus for that continuous study which is indispensable for proficiency, or whether it would really be any additional

value to the certificate of the Society of Arts, the benefit of which has in many cases proved so very great as to be beyond a money appreciation. Indeed, I think much importance ought not to be attached to pecuniary rewards except it may be as a peculiar distinction to very superior attainments. The certificate, as a proof of merit, is the principal object of ambition, and making the gain of a prize an ordinary result of the examinations, is more likely to clog the whole scheme from the inevitable difficulty of obtaining the requisite funds. If the Society of Arts be enabled to carry out the system of examinations to the fullest extent, and their certificates be solely relied upon as the advantage to be acquired, there is an infinitely better prospect of success than if year by year money prizes were looked for, and want of means compelled the refusal of the anticipated grants.

Another objection is the almost insuperable difficulty of effectually carrying out such a scheme with anything approaching a satisfactory result. It would involve a complicate machinery of organisation almost impossible of attainment, and an expenditure even greater than the benefit conferred. It is also very doubtful whether the successful candidate would be any real gainer in the end. The few shillings paid as the reward of his studies would be so much less paid by himself, as the majority of the recipients would be already members of a provident society, so that the payment for his future use would be practically a present payment to himself.

Another difficulty, though not perhaps one of the same magnitude, is the want of continuous residence by a great number of those who would be candidates for examination. Many young men, having few local ties, seek to advance their position in life by removal to more active centres of manufacturing or commercial enterprise. With the certificate of the Society of Arts, as a testimonial of competency and good character, they seek employment elsewhere, and the annual payment would therefore involve an expense and trouble in the shifting of its application more than its real worth.

But if the scheme should prove successful in inducing a great number of candidates to strive for and obtain the coveted certificates,—if the many hundreds or even thousands of our young men who are capable of the desired attainments should swell the annually-increasing roll, from what source will the annual funds be supplied, or what security will be expected or can be given for annuities varying from 2s. to 7s. 6d., amounting in the aggregate to many pounds, and each item requiring careful supervision for its faithful administration. I doubt if "J. C. B." could follow out his well-meant suggestion by devising any mode of proceeding that would be really practicable.

The Society of Arts will do more real service by efficiently organising local Boards of Examiners, so that the advantages may be, as far as possible, brought home to the greatest number, and by confining the attention of the candidates to the value of the certificates as a legitimate object of ambition. If, however, it be thought desirable to add prizes, whether of books, money, or instruments, they should be provided from local sources, or given only in special cases, marking thereby the extra proficiency of the recipient. In any case, however, they should be but of secondary importance, so that the true value of the certificates be not in any way diminished, nor their acquisition thought less desirable. A reward should have some appreciable value, either present or prospective, but it would be difficult to discover what incentive to studious application in one of the difficult sciences would be afforded by an annuity of 2s. 6d., which is proposed for the holder of a third-class certificate, who would constitute by far the largest number. He may form, and not unjustly, the highest notions of the benefits he may gain as the holder of the certificate—the evidence of his attainments—but his hopes will hardly be elevated by the acquisition of the proposed addition, trifling in itself, though costly in the aggregate.

I believe that far more practical good would be accomplished by enabling the local boards to examine the members of Mechanics' Institutions, and award certificates for proficiency in the elementary branches of education. It would prove in many cases a very useful stimulus to exertion, and these minor certificates might be made a condition for examination in the higher branches. Unfortunately, and in Yorkshire especially, there are many Institutions where the elementary branches form the chief staple of education. These often require some inducement to promote attention, and though in most cases such examinations might be carried on very effectively by the respective committees of management, and small prizes made the reward of merit, yet I believe that the honour of gaining a certificate from a competent authority would prove in many instances a far stronger incentive.

It is well, however, that the subject should undergo discussion. It will gain from publicity, and if those who are actively engaged in promoting mental cultivation amongst the great mass of our industrial population would use the columns of the *Journal* more frequently, it could not fail to have some beneficial effect in keeping attention alive to the subject.

I am, &c.,

BARNETT BLAKE.

Leeds.

EXHIBITION OF 1861.

SIR,—I cannot by any means agree with your correspondent "T. L. E.," in last week's *Journal*, as to Battersea being a more eligible site for the Exhibition of 1861 than Kensington Gore. I deny that the former has "the triple advantage of road, rail, and river," in the ample sense he means, and which is essential to the pecuniary success of the undertaking. It may have it for those who live on the Surrey side of the river, though that I doubt; but for the masses who reside on this, comprising, as it does, the wealth, intellect, and public spirit of the metropolis and its swarming suburbs (Islington, Camden Town, Bayswater, Paddington, Brompton, Kensington, Hackney, Clapton, Tottenham, &c., &c.), Hyde-park is in every way more convenient. Even in 1851, when railway, omnibus, and cab accommodation was comparatively scanty, the facilities afforded for cheap and rapid conveyance were obvious from the multitudes who daily crowded the aisles and galleries of the Exhibition, even to the last hour that it was open. It was the knowledge of this fact which mainly prompted the efforts made to retain the building permanently where it stood, even though the promoters could hardly hope to offer such interior temptations as those which it originally contained. The removal of it, therefore, to Sydenham was deemed by many to be a great mistake, and I presume that, though it now presents attractions of nature and art beyond those of any spot in the world, no one will pretend that it has been hitherto a successful speculation. This I wholly attribute to the difficulties, real and imaginary, of access, which the additional railway facilities recently opened up to the public have not overcome to any appreciable extent.

The site of a building to be frequented by the many should not only be easy of access, but also enjoy the advantage of ready means of return. This was eminently the case in 1851, and is so now at the South Kensington Museum, which is a sort of epitomised edition of the Great Exhibition. Being in the neighbourhood of the parks, it is convenient for carriage visitors during the London season, for pedestrians from the district, and for those who use cabs, omnibuses, and other public conveyances. For the accommodation of the increasing numbers who already visit that collection of so much that is exquisite and instructive in painting, sculpture, mediæval art, educational appliances, and scientific apparatus, many additional omnibuses run from Islington and elsewhere at very cheap rates. And when visitors desire to return,

they have no difficulty in finding these and other conveniences in abundance, close at hand. It fully answers the purpose of cab-proprietors to have "stands" near the Museum and elsewhere in Kensington and Brompton, for if they have not a sufficient supply of customers from that building, they can generally depend upon the miscellaneous wants of the district to make up the deficiency. Would that be the case at Battersea?

Even now, let those who return from the Crystal Palace by the new railway testify. I can speak from my own experience. For want of a populated vicinity, and therefore of a demand on which to depend, cabs are rarely to be found at the Battersea terminus, and omnibuses never. The last resource is the river, and if the supply of steamboats fails—and at present it is anything but abundant—those who have not their own vehicles are in a sorry plight, especially in bad weather.

But, besides all this, what do the thousands who now come up from the manufacturing districts know of Battersea? It is a terra incognita probably to the greater part of the residents of London, and of its northern and eastern districts, and can we imagine that it is less so to strangers?

Those who visit London for a short time, do not take up their quarters at Battersea or anywhere on that side of the Thames, and, if disposed to do so, where would they find accommodation? Sightseers prefer to frequent hotels which are as nearly equi-distant as possible from all the London lions.

All this has reference solely to the immediate pecuniary part of the question, arising from the payment made for admission, but something more may be urged against the locality advocated by "T. L. E.," on another score, viz., its moist and therefore dangerous atmosphere for works of art, and for fragile and coloured textures—in other words, for the bulk of the varied and valuable collection which is to constitute the attractions of the proposed Exhibition of 1861. Who, with the danger of damage from this unfortunate peculiarity, would trust their property within its walls? It may be that this normal condition of Battersea-fields is much improved by drainage, but few would be willing to test the fact at their own risk; and under any circumstances, the prejudice against the locality, on this account alone, has to be surmounted. I need not remind you that this is a slow process.

On the other hand, the locality of Gore-house enjoys a vast prestige, principally the result of actual experience in 1851. I hope, therefore, that taking this into account, and giving to the foregoing facts and arguments the weight to which they may be fairly entitled, the editor of the *Builder* will continue to advocate the site of Kensington as every way suited for the Exhibition of 1861.

I need scarcely add that I write all this simply as a member of the Society, and not of the Council, with none of whom have I conferred on the subject.

I am, &c.,

THOS. WINKWORTH.

Gresham Club, Sept. 15, 1858.

Proceedings of Institutions.

BRISTOL.—A meeting of the Board of Examiners for distribution of prizes and certificates awarded by the Society of Arts to successful candidates from the Athenæum, was held on Monday evening, in one of the classrooms. The Rev. Canon Girdlestone presided on the occasion, and in opening the proceedings of the evening, said, that as the chairman of the local board of Examiners in connexion with the Society of Arts, there had been allotted to him the very pleasing office of distributing amongst the successful candidates at the examination in connexion with the Society of Arts, which was held in the Athenæum in the early part of the spring, those certificates of proficiency and prizes which had been

awarded to them. The Rev. Canon went on to speak of the efforts made for the improvement of middle-class education by the Universities of Oxford and Cambridge, and by the Society of Arts, congratulating his hearers on the results which had followed these examinations, especially the one which had taken place in connexion with the Bristol Athenæum, there having been only one failure, and also on the fact of permission having been first obtained through the instrumentality of this institution for ladies to compete. Throughout the whole country there had been only one other lady who had been successful, while the Bristol Athenæum had furnished four who had obtained certificates of proficiency in the French language. There were two gentlemen who had obtained certificates of proficiency in free-hand drawing; and one gentleman who stood alone in the list, to whom would be awarded a prize of £5, a prize of £3, and two certificates of excellence. Seeing that these prizes were bestowed for algebra, and conic sections, for trigonometry and similar subjects, he (the rev. canon) had no doubt that this young gentleman's head would be strong enough to bear the honours he had earned; and he congratulated the Bristol Grammar School on having produced so proficient a pupil. In conclusion, the rev. canon expressed a hope that the success which had attended the past examination would induce a still larger competition next year, and that the results would be proportionately gratifying. The following were the successful candidates to whom prizes and certificates were awarded amidst loud cheers:—Miss Eliza Hall and Miss Elizabeth McArthur, pupils of Athenæum French class, under M. de Candole—certificates of proficiency in French; Miss Margaret Lydia Lovell and Miss Alice Davies, pupils of Athenæum French class, under M. de Candole—certificates of competency in French. Francis Stone Evans, pupil of Bristol Grammar School, C. T. Hudson, Esq., master—1st prize, £5, in conic sections; 2nd prize, £3, in algebra; certificate of excellence in arithmetic, algebra, and conic sections; certificate of proficiency in geometry, trigonometry, and French. Thomas H. Yabbicom and James Craik, pupils of Mr. E. Beeks, Athenæum drawing master—certificates of proficiency in free-hand drawing. John Morris Harris, pupil of Athenæum French class, M. de Candole—Certificate of competency in French. Mr. M. Whitwill proposed a vote of thanks to the examiners, especially to those who were not directors of the Athenæum, which was seconded by Mr. Bell, and carried by acclamation. The Rev. Canon Girdlestone acknowledged the compliment, and stated that although his connexion with the Athenæum, from the commencement, had been a pleasurable one, nothing had given him greater pleasure than the examinations out of which the proceedings of that evening had arisen.

LONDONERRY.—The last report of the Young Men's Literary Association, speaks of the continued prosperity of the Institution. Its funds are satisfactory, its members are numerous, and the society is daily progressing in public favour. The want of such an association had long been felt in the city, and those who succeeded, at much personal trouble, in establishing the present society, may now rejoice to find that its advantages are almost universally appreciated, and that their young fellow-citizens are turning to practical account the facilities offered for instruction and improvement. During the past year the committee have exerted themselves to furnish the members with those facilities. The reading-room has been copiously supplied with newspapers and periodicals, lectures have been delivered, and sub-associations, for the departmental promotion of the great primary objects of the Society, have been spontaneously established by the members. Foremost among these they would notice the discussion class. In this class, debates, recitations, essays, and other literary efforts, form the business of weekly meetings; and the good results of this system of educational training were pleasingly exemplified

on the occasion of a soiree recently held in connexion with this department of the association, and at which the addresses of the several speakers were such as would do credit to gentlemen of much higher pretensions. The committee trust that this discussion class will go on and prosper. They regard it as the germ of a valuable and most desirable movement. The progress of the other classes has been also cheering. In the Mercantile, French, and Music Classes, the work has been carried on with spirit, and with very considerable benefit to the pupils. With reference to lectures, Mr. Fitzgibbon, Q.C.; Mr. Henry McCay, LL.B.; Dr. Babington, Mr. Patterson, and Professors Dickie, Partington, and Thompson, with other gentlemen, have kindly given their services as lecturers during the season. Their lectures were, generally speaking, well attended; and, in reference to those held under the auspices of the Board of Trade, it affords the Committee no ordinary satisfaction to congratulate the Society on several of its members having eminently distinguished themselves in the subsequent examinations. Numerous prizes have thus been obtained by members of the Association. The new rooms of the Association, in Shipquay-street, occupy a most central and respectable position, and have been found most advantageous to members. In conclusion, the Committee desire to remind the Society that, unassisted by the members themselves, they can do but little. What they require is the active and persevering co-operation of the members. Let every person in the Association act as though he had an individual interest to maintain and an individual object to advance. Let the members urge their friends to join the society, and participate in those advantages which they have themselves experienced. If this be done, there need be little doubt that the Institution will flourish, and that it will enjoy a prosperous and permanent existence.

POOLE.—In the report of the Town Library Literary and Scientific Institution, for 1858, the Committee congratulate the members on its continued prosperity. They cannot, however, but regret that little has been done towards reducing the debt still remaining. The lectures during the year have entailed a heavy expense on the Institution. Nine lectures have been delivered, at a cost to the Institution of £25 17s. 4d.; the receipts for which have only amounted to £6, thus leaving a loss of about £2 4s. on each lecture. Every care has been taken to prevent unnecessary expense in the arrangements for them, but it must be evident to all that if lectures are to be given, and if the members have the privilege of attending them gratuitously, they will always add considerably to the annual expenses; also, that if good lecturers are to be engaged, whether gratuitous or otherwise, if not residing in the immediate neighbourhood, the expense of each lecture cannot be much reduced. It should be recollected, in considering the expenses of the lectures, that the members, through a reciprocation of privileges with the Mechanics' Institution, have had the opportunity of attending also six lectures delivered for that Institution, without any expense to the Town Library. The conversazione also, for 1857, owing to the evening on which it was held proving very wet, preventing numbers from attending, instead of adding to, has drawn rather heavily on the funds—that, and the labour the arrangements entail on a few individuals, will prevent its being repeated annually, as was at first hoped might be the case by its promoters in the committee. The principal feature in the progress of the institution has been the establishment, from the nucleus that already existed, of a Museum of Local Natural History, Geology, and Antiquities. It is still in embryo, but the committee hope that in a few years it will become, by the combined efforts and hearty co-operation of the members and friends of the Institution, a first-class county museum, and prove an attraction to the town, which has at present but few objects of interest for the visitor. The committee earnestly invite the members and friends of the institution to visit the Museum, and to assist in the collection,

and by the donation of objects. In the possession of some of the ancient families of the town there are probably many relics of the past history of the town and county, which might be advantageously deposited by the present possessors in such a Museum, and by entrusting them to the care of the committee for the museum, they might render a great service to the town. The curator reports that donations of money amounting to £9 10s., in aid of the museum fund, have been already made, and enumerates various deposits of materials for the museum which have been kindly placed in his hands.

PATENT LAW AMENDMENT ACT.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

[From Gazette, Sept. 10, 1858.]

- Dated 10th May, 1858.*
1040. C. F. Vasseroet, 45, Essex-street, Strand—Improved driving machinery, applicable either for thrashing, winnowing, cleaning, and bruising grain, cutting straw, or other agricultural purposes. (A com.)
- Dated 19th July, 1858.*
1620. C. F. Vasseroet, 45, Essex-street, Strand—An improved artificial manure. (A com.)
- Dated 12th August, 1858.*
1836. G. Metzler, Great Marlborough-street, and J. Waddell, Brompton—Imp. in the construction and formation of valve musical instruments.
- Dated 13th August, 1858.*
1854. T. G. Pengelly, 5, Chesnut-terrace, Waltham-cross, Hertfordshire, and H. Brown, Old-road, Enfield Highway—Imp. in apparatus for straightening gun-barrels.
- Dated 14th August, 1858.*
1858. J. Smith, Seaford, near Liverpool, and S. A. Cheese, Liverpool—Improved arrangements for obtaining and applying motive power.
- Dated 21st August, 1858.*
1862. G. Betjemann, G. W. Betjemann, and J. Betjemann, Upper Ashby-street—An imp. in book slides.
- Dated 23rd August, 1858.*
1902. G. J. Walker, Norton Folgate—Improvements in funeral carriages.
- Dated 24th August, 1858.*
1904. R. A. Brooman, 166, Fleet-street—Imp. in sewing machines. (A com.)
- Dated 25th August, 1858.*
1906. C. De Jongh, Lautenbach, near Guebwiller, France—Imp. in machinery for combing and heckling fibrous materials.
- Dated 26th August, 1858.*
1908. W. W. Harrison, Sheffield—An imp. in cruet and liqueur stands.
- Dated 27th August, 1858.*
1910. F. Puls, Roxburg-terrace, Haverstock-hill—Imp. in the distillation of bituminous matters and gas tar.
- Dated 28th August, 1858.*
1914. A. Boyle, Birmingham—Imp. in the manufacture of certain parts of umbrellas and parasols, and in machinery employed in the said manufacture.
- Dated 29th August, 1858.*
1916. H. D. Joncken, London—Imp. in electric telegraphs. (Partly a com.)
- Dated 30th August, 1858.*
1918. W. H. Harfield, Fenchurch-street—Imp. in windlasses.
- Dated 31st August, 1858.*
1920. C. A. Schrader, Finsbury-square—An instrument to be used in boring, for mining or other purposes.
- Dated 1st September, 1858.*
1922. J. Hine and A. Abrahams, St. John-street-road—Imp. in book slides or holders.
- Dated 2nd September, 1858.*
1924. J. Macintosh, North Bank, Regent's-park—Imp. in insulating telegraphic wires or conductors, and in apparatus employed therein, part of which apparatus is applicable to the manufacture of tubes from india rubber.
- Dated 3rd September, 1858.*
1926. H. B. Barlow, Manchester—Certain imp. in machinery for preparing flax, wool, and other fibrous materials. (A com.)
- Dated 4th September, 1858.*
1927. T. Hill, Heywood, Lancashire—Imp. in machinery or apparatus for punching and shearing metals.
- Dated 5th September, 1858.*
1929. R. A. Brooman, 166, Fleet-street—Imp. in the treatment of vegetable substances in order to convert the fibrous portions thereof into pulp. (A com.)
- Dated 6th September, 1858.*
1931. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in bellows. (A com.)
- Dated 7th September, 1858.*
1933. J. Black, Edinburgh—An improved mode or means of obtaining, applying, and transmitting motive power.
- Dated 8th September, 1858.*
1935. S. N. Rodier, 21, Oak-village, St. Pancras—Imp. in apparatus for regulating gas.
- Dated 9th September, 1858.*
1937. D. Graham-Hope, Manchester—Imp. of locomotive and other steam engines.
- Dated 10th September, 1858.*
1938. T. Trotman, 253, Albany-road, Camberwell—Imp. in hair pins.
- Dated 11th September, 1858.*
1939. J. Ellisdon, Liverpool—Imp. applicable to reading chairs, and other articles used to sit or recline upon.
- Dated 12th September, 1858.*
1940. F. Matley, Paris—Certain imp. in apparatus for regulating the flow of gas, and for improving its illuminating power. (A com.)
- Dated 13th September, 1858.*
1941. W. S. Clark, Banbury—Imp. in reeling or furling sails from the deck of vessels. (A com.)
- Dated 14th September, 1858.*
1942. W. Eason, Cheltenham—Imp. in wet gas meters.

- Dated 15th September, 1858.*
1943. H. W. Hart, 69, Fleet-street—Imp. in the application of gas to chandeliers.
- Dated 16th September, 1858.*
1944. F. J. Evans, Chartered Gas Works, Horseferry-road, Westminster—An imp. applicable to gas purifying.
- Dated 17th September, 1858.*
1945. A. V. Newton, 66, Chancery-lane—Improved machinery for sorting silk or other thread according to its size or thickness. (A com.)
- Dated 18th September, 1858.*
1946. W. E. Newton, 66, Chancery-lane—Imp. applicable to vessels employed in the manufacture of glass, or the melting of vitreous substances. (A com.)
- Dated 19th September, 1858.*
1947. W. Kempe, Holbeck Mills, Leeds—Imp. in apparatus used for winding woollen and other fabrics on rollers, in order to such fabrics being boiled or faced when on the rollers.
- Dated 20th September, 1858.*
1948. John Fowler, junr., Cornhill, and R. Burton, Kingsland-road—Imp. in the construction and arrangement of locomotive and other carriages, to facilitate their movement on common roads and other surfaces.
- Dated 21st September, 1858.*
1949. R. Knight, Foster-lane, London—Imp. in apparatus for aerating liquids.

Dated 28th August, 1858.

- Dated 29th August, 1858.*
1951. G. White, 34, Dowgate-hill, Cannon-street—Ambulatory furniture for apartments. (A com.)
- Dated 30th August, 1858.*
1953. G. Coode, Westminster—Imp. in the adjustment of hose in machines for distributing liquid manure and other liquids over land; also for an improved method of, and apparatus for, manufacturing the hose to be used with such machines or otherwise, and for gathering and puckering canvas, linen, leather, and other textile and membranous substances.
- Dated 31st August, 1858.*
1955. G. Weedon, 4, Poland-street, and D. W. Rice, 11, New-road, Woolwich—An improved knife and fork cleaning machine, part of which is applicable to other purposes.
- Dated 1st September, 1858.*
1957. J. Platt and E. Hartley, Oldham—Imp. in certain parts of machinery for preparing and spinning cotton and other fibrous materials.
- Dated 2nd September, 1858.*
1959. J. Brazil and J. McKinnell, Manchester—An improved method of indigo blue dyeing. (A com.)
- Dated 3rd September, 1858.*
1961. J. Brazil and J. McKinnell, Manchester—An improved method of indigo blue dyeing.
- Dated 4th September, 1858.*
1963. J. Oxley, Camden Town—Imp. in baths.
- Dated 5th September, 1858.*
1965. J. L. Clark, Adelaide-road, Middlesex, F. Braithwaite, Bridge-street, Westminster, and G. E. Preece, Bernard street, Middlesex—Imp. in telegraph cables.
- Dated 6th September, 1858.*
1967. L. Wiart, Cambrai, France—An improved mode of generating steam or heating water or liquids.
- Dated 7th September, 1858.*
1969. J. H. Johnson, 47, Lincoln's-inn-fields—Imp. in the construction of governors or regulators for steam engines. (A com.)
- Dated 8th September, 1858.*
1973. M. A. F. Mennons, 39, Rue de l'Echiquier, Paris—An improved apparatus for mounting the driving bands of machinery in movement. (A com.)
- Dated 9th September, 1858.*
1975. J. Stoneham, Audenshaw, near Manchester—Imp. in cleaning and treating cotton and woollen waste or other fibrous materials, and in extracting oil or grease therefrom.

INVENTIONS WITH COMPLETE SPECIFICATION FILED.

2022. G. G. Bussey, 12, Arthur-street, New Oxford-street—Holding and carrying cartridges.—7th September, 1858.
2023. W. Tucker, Rhode Island, U.S.—An improved variable bearing bit.—7th September, 1858.

WEEKLY LIST OF PATENTS SEALED.

- | | |
|--------------------------------------|--|
| <i>September 10th.</i> | <i>September 10th.</i> |
| 449. S. Wheatcroft. | 779. W. G. Armstrong. |
| 511. S. T. Farmelee. | 786. J. Bailey, E. Oldfield, & S. Oddy. |
| 512. G. Pigott. | 811. J. H. Johnson. |
| 517. S. T. Osmond and E. D. Collins. | 833. E. F. Sans. |
| 518. J. C. Martin. | 835. A. A. Lutereau. |
| 520. R. Edwards. | 859. W. Clark. |
| 522. R. A. Brooman. | 861. J. Whiteley. |
| 526. J. Aled and J. Crabtree. | 865. G. Finlayson. |
| 529. A. Wallis and C. Haslam. | 929. J. Fraser. |
| 531. E. A. L. D'Argy. | 947. A. V. Newton. |
| 532. D. Gallafent. | 951. J. Martin. |
| 533. G. Hall. | 953. B. E. Guyot de Brun. |
| 537. P. Le Capelain. | 979. W. Hopkins and J. Dewhurst. |
| 551. R. Glaaville. | 1049. J. Luis. |
| 568. G. Williams & E. Rowley. | 1061. J. Dyson, E. W. Shirt, and H. Shirt. |
| 571. D. Evans. | 1315. J. Luis. |
| 596. A. Lester. | 1431. C. W. Cahoon. |
| 607. E. Coulon. | 1458. W. E. Newton. |
| 639. P. H. G. Bérard. | 1503. A. V. Newton. |
| 669. J. R. Breckon & R. Dixon. | 1545. W. Simons. |
| 697. H. Ward. | 1558. W. Northen. |
| 719. W. Clark. | |
| 220. W. S. Clark. | |

PATENTS ON WHICH THE STAMP DUTY OF £50 HAS BEEN PAID.

- | | |
|------------------------------|--|
| <i>September 6th.</i> | <i>September 9th.</i> |
| 2047. E. Sharpe. | 2063. F. G. Spilsbury & F. W. Emerson. |
| <i>September 7th.</i> | |
| 2032. R. B. Foather. | |
| 2058. J. C. G. Kennedy. | |
| 2111. J. Willis. | <i>September 10th.</i> |
| <i>September 8th.</i> | 2071. A. Longbottom. |
| 2057. M. Curtis and J. Wain. | 2092. J. Lewtas. |